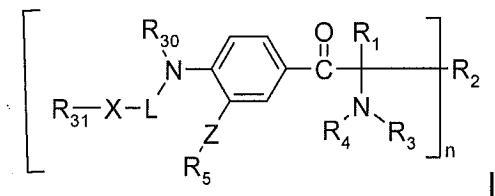


In the Claims:

1. (currently amended) Photoinitiators of the formula I



wherein

n is 1 or 2;

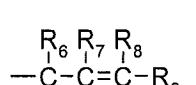
L is a linker;

X is -O-, -S- or -NR<sub>32</sub>-;

Z is a direct bond, -CH<sub>2</sub>-, -O-, -S- or -NR<sub>10</sub>-;

R<sub>1</sub> is

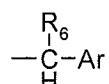
- (a) linear or branched C<sub>1</sub>-C<sub>12</sub>-alkyl, which is unsubstituted or substituted by one or more of the groups C<sub>1</sub>-C<sub>4</sub>-alkyoxy, phenoxy, halogen or phenyl;
- (b) a radical of the formula



- (c) a radical of the formula



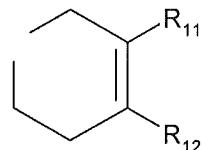
- (d) a radical of the formula



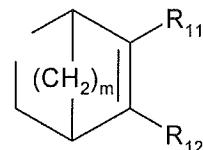
where Ar is phenyl, which is unsubstituted or substituted by one or more of the groups halogen, OH, NO<sub>2</sub>, -N(R<sub>10</sub>)<sub>2</sub>, C<sub>1</sub>-C<sub>12</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkyl that is additionally substituted by OH, halogen, N(R<sub>10</sub>)<sub>2</sub>, C<sub>1</sub>-C<sub>12</sub>-alkoxy, -COO(C<sub>1</sub>-C<sub>18</sub>-alkyl), -CO(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>OCH<sub>3</sub> or -OCO(C<sub>1</sub>-C<sub>4</sub>-alkyl); C<sub>1</sub>-C<sub>12</sub>-alkyoxy, C<sub>1</sub>-C<sub>4</sub>-alkyoxy that is additionally substituted by -COO(C<sub>1</sub>-C<sub>18</sub>-alkyl) or -CO(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>OCH<sub>3</sub>; -OCO(C<sub>1</sub>-C<sub>4</sub>-alkyl), C<sub>1</sub>-C<sub>8</sub>-alkylthio, phenoxy, -COO(C<sub>1</sub>-C<sub>18</sub>-alkyl), -CO(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>OCH<sub>3</sub>, phenyl or benzoyl; where n is 1-20;

R<sub>2</sub> if n is 1, independently of R<sub>1</sub> has one of the meanings of R<sub>1</sub>; or

R<sub>1</sub> together with R<sub>2</sub> forms a ring of the formula



or



where m is 1 or 2;

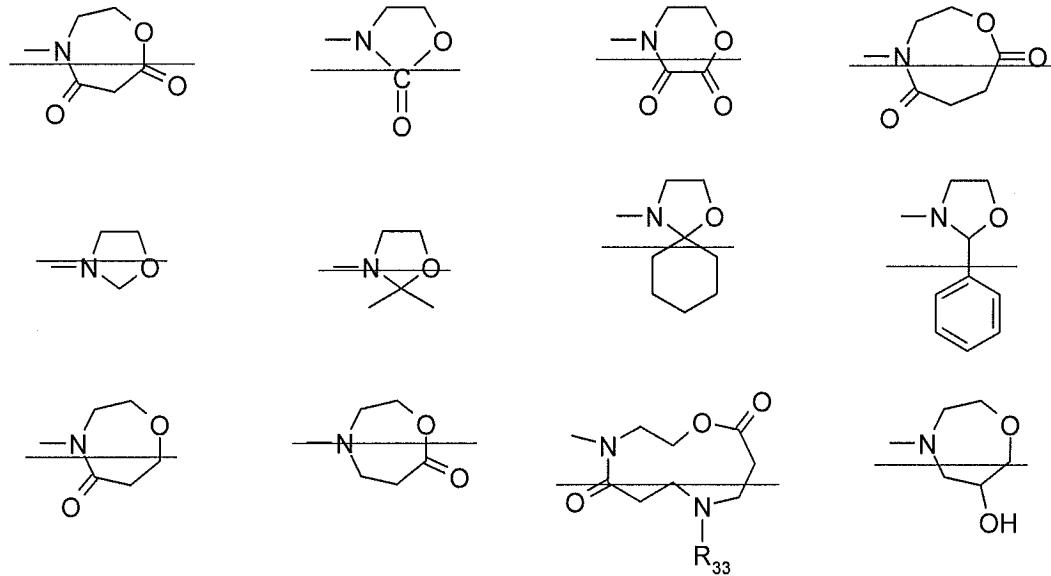
- R<sub>2</sub> if n is 2, is a direct bond, C<sub>2</sub>-C<sub>16</sub>-alkylene, cyclohexylene, xylylene, dihydroxyxylylene, C<sub>4</sub>-C<sub>8</sub>-alkenediyl, C<sub>6</sub>-C<sub>10</sub>-alkadienediyl or dipentenediyl;
- R<sub>3</sub> is hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl, C<sub>2</sub>-C<sub>4</sub>-alkyl substituted by one or more of the groups hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy, -CN, -COO(C<sub>1</sub>-C<sub>4</sub>-alkyl); C<sub>3</sub>-C<sub>5</sub>-alkenyl, C<sub>5</sub>-C<sub>12</sub>-cycloalkyl or C<sub>7</sub>-C<sub>9</sub>-phenylalkyl;
- R<sub>4</sub> is C<sub>1</sub>-C<sub>12</sub>-alkyl, C<sub>2</sub>-C<sub>4</sub>-alkyl substituted by one or more of the groups hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy, -CN, -COO(C<sub>1</sub>-C<sub>4</sub>-alkyl); C<sub>3</sub>-C<sub>5</sub>-alkenyl, C<sub>5</sub>-C<sub>12</sub>-cycloalkyl, C<sub>7</sub>-C<sub>9</sub>-phenylalkyl, phenyl; or R<sub>4</sub> and R<sub>2</sub> together is C<sub>1</sub>-C<sub>7</sub>-alkylene, C<sub>7</sub>-C<sub>10</sub>-phenylalkylene, o-xylylene, 2-butylene or C<sub>2</sub>-C<sub>3</sub>-oxa- or azaalkylene; or R<sub>4</sub> and R<sub>3</sub> together is C<sub>3</sub>-C<sub>7</sub>-alkylene that may be interrupted by -O-, -S-, -CO- or -N(R<sub>13</sub>)- and substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy or -COO(C<sub>1</sub>-C<sub>4</sub>-alkyl);
- R<sub>5</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl; or R<sub>5</sub> together with R<sub>30</sub> is C<sub>1</sub>-C<sub>2</sub>-alkylene;
- R<sub>6</sub> is hydrogen, C<sub>1</sub>-C<sub>8</sub>-alkyl or phenyl;
- R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> independently of each other are hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl, or R<sub>7</sub> and R<sub>8</sub> together are C<sub>3</sub>-C<sub>7</sub>-alkylene;
- R<sub>10</sub> is hydrogen, C<sub>1</sub>-C<sub>8</sub>-alkyl, C<sub>3</sub>-C<sub>5</sub>-alkenyl, C<sub>7</sub>-C<sub>9</sub>-phenylalkyl, C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl or phenyl;
- R<sub>11</sub> and R<sub>12</sub> independently of each other are hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl, or R<sub>11</sub> and R<sub>12</sub> together are C<sub>3</sub>-C<sub>7</sub>-alkylene;
- R<sub>13</sub> is hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl, which may be interrupted by one or more -O- or C<sub>3</sub>-C<sub>5</sub>-alkenyl, C<sub>7</sub>-C<sub>9</sub>-phenylalkyl, C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl, -CH<sub>2</sub>CH<sub>2</sub>CN, -CH<sub>2</sub>CH<sub>2</sub>COO(C<sub>1</sub>-C<sub>4</sub>-alkyl), C<sub>2</sub>-C<sub>8</sub>-alkanoyl, or benzoyl;

R<sub>30</sub> is hydrogen.

R<sub>30</sub> and R<sub>31</sub> independently of one another are is hydrogen, C<sub>1</sub>-C<sub>18</sub>-alkyl or C<sub>1</sub>-C<sub>18</sub>-alkyl substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy, -O-CO-(C<sub>1</sub>-C<sub>4</sub>-alkyl), -CN and/or -COO( C<sub>1</sub>-C<sub>4</sub>-alkyl); C<sub>3</sub>-C<sub>18</sub>-alkenyl, C<sub>5</sub>-C<sub>12</sub>-cycloalkyl, C<sub>7</sub>-C<sub>9</sub>-phenylalkyl, C<sub>2</sub>-C<sub>18</sub>-alkanoyl, benzoyl or norbornenoyl; or C<sub>2</sub>-C<sub>18</sub>-alkanoyl, benzoyl or norbornenoyl substituted by C<sub>1</sub>-C<sub>4</sub>-alkoxy, -NR<sub>33</sub>R<sub>34</sub>, -SR<sub>35</sub>, -COOH or -COO( C<sub>1</sub>-C<sub>4</sub>-alkyl); or benzoyl or norbornenoyl substituted by hydroxy, or C<sub>3</sub>-C<sub>5</sub>-alkenoyl, -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>12</sub>-alkyl) or -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>12</sub>-alkylphenyl); or -CO-NH-C<sub>1</sub>-C<sub>12</sub>-alkyl or -CO-NH-(C<sub>0</sub>-C<sub>12</sub>-Alkylen)-N=C=O optionally interrupted by one or two phenylene, methylphenylene, phenylene-O-phenylene, cyclohexanediyI, methylcyclohexanediyI, trimethylcyclohexanediyI, norbornanediyI,

[1-3]diazetidine-2,4-dione-1,3-diyl, 3-(6-isocyanatohexyl)-biuret-1,5-diyl or 5-(6-isocyanatohexyl)-[1,3,5]triazinan-2,4,6-trion-1,3-diyl; or

$R_{30}$  and  $R_{34}$  together with the group  $-N-L-X$  form cyclic structures selected from



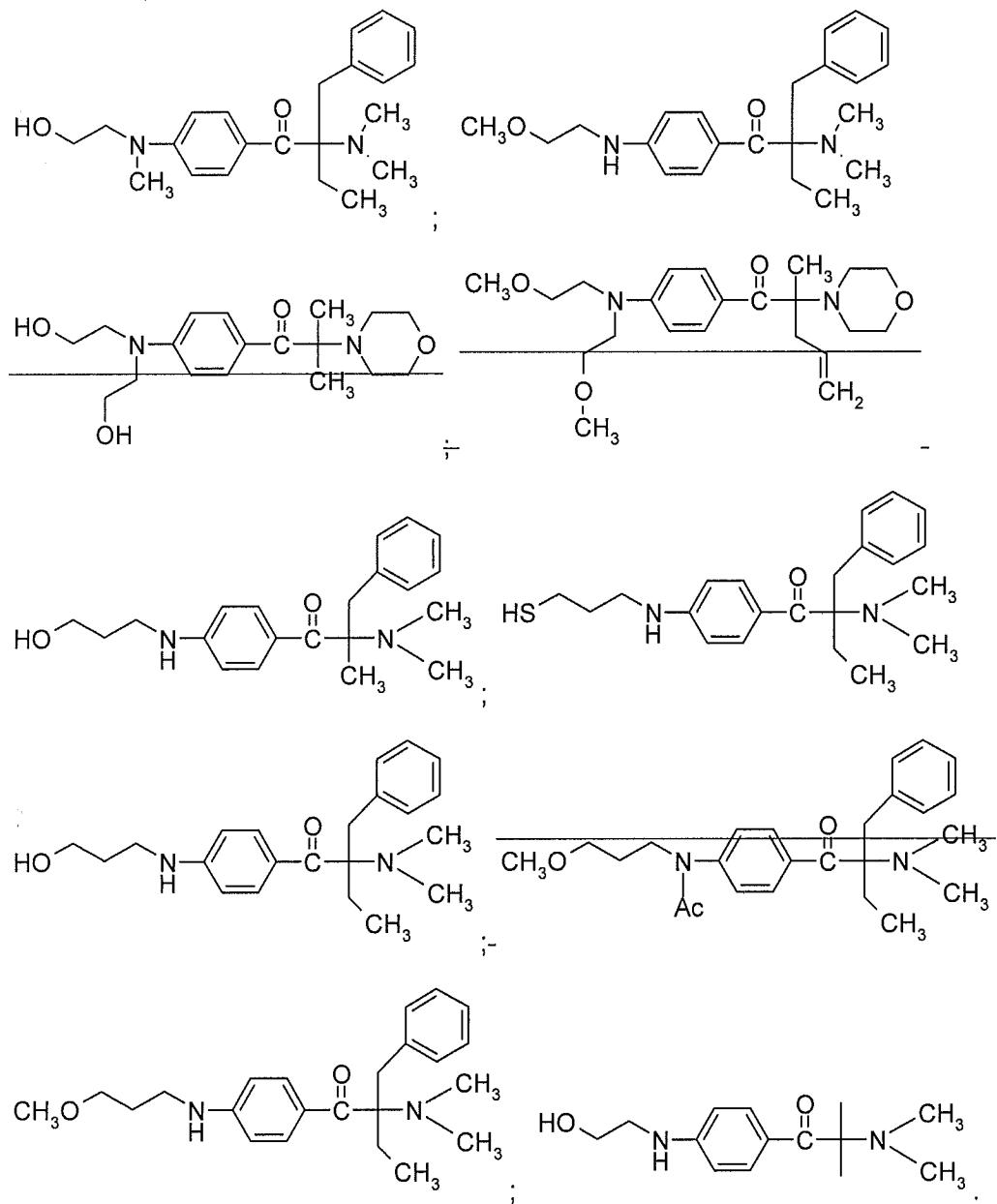
$R_{32}$  is hydrogen,  $C_1-C_{18}$ -alkyl or  $C_1-C_{18}$ -alkyl substituted by hydroxy,  $C_1-C_4$ -alkoxy,  $-O-CO-(C_1-C_4$ -alkyl),  $-CN$  and/or  $-COO(C_1-C_4$ -alkyl);  $C_3-C_{18}$ -alkenyl,  $C_5-C_{12}$ -cycloalkyl,  $C_7-C_9$ -phenylalkyl,  $C_2-C_{18}$ -alkanoyl, benzoyl or norbornenoyl; or  $C_2-C_{18}$ -alkanoyl benzoyl or norbornenoyl substituted by hydroxy,  $C_1-C_4$ -alkoxy,  $-NR_{33}R_{34}$ ,  $-SR_{35}$ ,  $-COOH$  or  $-COO(C_1-C_4$ -alkyl); or  $C_3-C_5$ -alkenoyl,  $-SO_2-(C_1-C_{12}$ -alkyl) or  $-SO_2-(C_1-C_{12}$ -alkylphenyl); or  $-CO-NH-C_1-C_{12}$ -alkyl or  $-CO-NH-(C_0-C_{12}$ -Alkylene)- $N=C=O$  optionally interrupted by one or two phenylene, methylphenylene, phenylene-O-phenylene, cyclohexanediyi, methylcyclohexanediyi, trimethylcyclohexanediyi, norbornanediyi, [1-3]diazetidine-2,4-dione-1,3-diyl, 3-(6-isocyanatohexyl)-biuret-1,5-diyl or 5-(6-isocyanatohexyl)-[1,3,5]triazinan-2,4,6-trion-1,3-diyl;

$R_{33}$  and  $R_{34}$  independently of one another are hydrogen,  $C_1-C_{12}$ -alkyl,  $C_2-C_4$ -hydroxy-alkyl,  $C_3-C_{10}$ -alkoxyalkyl,  $C_3-C_5$ -alkenyl,  $C_5-C_{12}$ -cycloalkyl,  $C_7-C_9$ -phenylalkyl, phenyl,  $C_2-C_{18}$ -alkanoyl or benzoyl; or  $R_{33}$  and  $R_{34}$  together are  $C_2-C_8$ -alkylene optionally interrupted by  $-O-$ ,  $-S-$  or  $-NR_{36}-$ , or are  $C_2-C_8$ -alkylene optionally substituted by hydroxy,  $C_1-C_4$ -alkoxy,  $-O-CO-(C_1-C_4$ -alkyl), or  $-COO(C_1-C_4$ -alkyl);

$R_{35}$  is  $C_1-C_{18}$ -alkyl, hydroxyethyl, 2,3-dihydroxypropyl, cyclohexyl, benzyl, phenyl,  $C_1-C_{12}$ -alkylphenyl,  $-CH_2-COO(C_1-C_{18}$ -alkyl),  $-CH_2CH_2-COO(C_1-C_{18}$ -alkyl) or  $-CH(CH_3)-COO(C_1-C_{18}$ -alkyl);

$R_{36}$  is hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl optionally interrupted by one or more no adjacent –O-atoms, C<sub>3</sub>-C<sub>5</sub>-alkenyl, C<sub>7</sub>-C<sub>9</sub>-phenylalkyl, C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl, -CH<sub>2</sub>CH<sub>2</sub>CN, -CH<sub>2</sub>CH<sub>2</sub>COO(C<sub>1</sub>-C<sub>4</sub>-alkyl), C<sub>2</sub>-C<sub>12</sub>-alkanoyl or benzoyl;

with the proviso that the following compounds are excluded:



2. (currently amended) Photoinitiators according to claim 1, wherein

n is 1 or 2;

L is a linker;

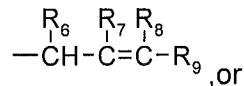
X is  $-O-$ ,  $-S-$  or  $-NR_{32}-$ ;

Z is a direct bond;

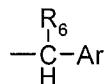
R<sub>1</sub> is

(a) linear or branched unsubstituted C<sub>1</sub>-C<sub>12</sub>-alkyl;

(b) a radical of the formula;



(d) a radical of the formula



wherein Ar is phenyl, which is unsubstituted or substituted by one or more of the groups NO<sub>2</sub>, -N(R<sub>10</sub>)<sub>2</sub>, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-alkylthio, phenoxy;

R<sub>2</sub> if n is 1, independently of R<sub>1</sub> has one of the meanings of R<sub>1</sub>;

R<sub>2</sub> if n is 2, is C<sub>2</sub>-C<sub>8</sub>alkylene;

R<sub>3</sub> is C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>2</sub>-C<sub>4</sub>-alkyl substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy; C<sub>3</sub>-C<sub>5</sub>-alkenyl;

R<sub>4</sub> independently of R<sub>3</sub> has one of the meanings of R<sub>3</sub>; or R<sub>4</sub> together with R<sub>3</sub> is C<sub>4</sub>-C<sub>5</sub>-alkylene that may be interrupted by -O-, -N(R<sub>13</sub>)-;

R<sub>5</sub> is hydrogen;

R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> independently of each other are hydrogen or methyl;

R<sub>10</sub> is hydrogen, C<sub>1</sub>-C<sub>4</sub>-alkyl or C<sub>3</sub>-C<sub>5</sub>-alkenyl;

R<sub>13</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl;

R<sub>30</sub> is hydrogen

R<sub>30</sub> and R<sub>31</sub> independently of one another are is hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl; or C<sub>2</sub>-C<sub>6</sub>-alkyl substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy, -O-CO-(C<sub>1</sub>-C<sub>4</sub>-alkyl), or -COO(C<sub>1</sub>-C<sub>4</sub>-alkyl); allyl, cyclohexyl or C<sub>7</sub>-C<sub>9</sub>-phenylalkyl; or C<sub>2</sub>-C<sub>12</sub>-alkanoyl, benzoyl or norbornenoyl; or C<sub>2</sub>-C<sub>12</sub>-alkanoyl, benzoyl or norbornenoyl substituted by C<sub>1</sub>-C<sub>4</sub>-alkoxy, -COOH or -COO(C<sub>1</sub>-C<sub>4</sub>-alkyl); or C<sub>3</sub>-C<sub>5</sub>-alkenoyl; or -CO-NH-C<sub>1</sub>-C<sub>12</sub>-alkyl or -CO-NH-(C<sub>0</sub>-C<sub>12</sub>-alkylen)-N=C=O, optionally interrupted by one or two phenylene, methylphenylene, phenylene-O-phenylene, cyclohexanediyil, methylcyclohexanediyil, trimethylcyclohexanediyil, norbornanediyil, [1-3]diazetidine-2,4-dione-1,3-diyil, 3-(6-isocyanatohexyl)-biuret-1,5-diyil or 5-(6-isocyanatohexyl)-[1,3,5]triazinane-2,4,6-trione-1,3-diyil;

R<sub>32</sub> is hydrogen or C<sub>1</sub>-C<sub>12</sub>-alkyl.

3. (currently amended) Photoinitiators according to claim 2, wherein

n is 1 or 2;

L is linear or branched C<sub>2</sub>-C<sub>18</sub>-alkanediyl;

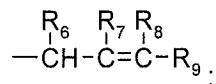
X is -O-;

Z is a direct bond;

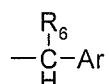
R<sub>1</sub> is

(a) linear or branched unsubstituted C<sub>1</sub>-C<sub>3</sub>-alkyl;

(b) a radical of the formula:



(d) a radical of the formula



where Ar is phenyl, which is unsubstituted or substituted by CH<sub>3</sub>-

NO<sub>2</sub> or -N(R<sub>10</sub>)<sub>2</sub>;

R<sub>2</sub> if n is 1, independently of R<sub>1</sub> has one of the meanings of R<sub>1</sub>;

R<sub>2</sub> if n is 2, is C<sub>2</sub>-C<sub>8</sub>alkylene;

R<sub>3</sub> is methyl,

R<sub>4</sub> is methyl or R<sub>4</sub> together with R<sub>3</sub> is C<sub>5</sub>-alkylene that is interrupted by -O-;

R<sub>5</sub> is hydrogen;

R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> are hydrogen;

R<sub>10</sub> is hydrogen;

R<sub>30</sub> is hydrogen;

~~R<sub>30</sub> and R<sub>31</sub> independently of one another are~~ is hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl; or C<sub>2</sub>-C<sub>6</sub>-alkyl substituted by hydroxy; C<sub>1</sub>-C<sub>4</sub>-alkoxy, -O-CO-(C<sub>1</sub>-C<sub>4</sub>-alkyl), or C<sub>3</sub>-C<sub>5</sub>-alkenoyl.

4.(previously presented) Photoinitiators according to claim 1, wherein n is 1 or 2, R<sub>1</sub> is benzyl, 4-aminobenzyl, propyl or allyl and R<sub>2</sub> is ethyl or is C<sub>2</sub>-C<sub>8</sub>alkylene.

5. (original) A composition comprising

(A) at least one ethylenically unsaturated compound;

(B) a photoinitiator of formula I as defined in claim 1.

6-7. (cancelled)

8. (previously presented) Photoinitiators according to claim 2, wherein n is 1 or 2, R<sub>1</sub> is benzyl, 4-aminobenzyl, propyl or allyl and R<sub>2</sub> is ethyl or is C<sub>2</sub>-C<sub>8</sub>alkylene.

9. (previously presented) Photoinitiators according to claim 3, wherein n is 1 or 2, R<sub>1</sub> is benzyl, 4-aminobenzyl, propyl or allyl and R<sub>2</sub> is ethyl or is C<sub>2</sub>-C<sub>8</sub>alkylene.

10. (previously presented) A method for photopolymerization of ethylenically unsaturated compounds or mixtures containing ethylenically unsaturated compounds which method comprises preparation of a composition comprising ethylenically unsaturated compounds and compounds of the formula I according to claim 1 and exposure of the composition to electromagnetic radiation.

11. (previously presented) A method for the preparation of multifunctional photoinitiators by reaction of compounds of the formula I as defined in claim 1 with appropriate reagents.

12. (previously presented) A method for the preparation of multifunctional photoinitiators according to claim 11 by reaction of compounds of the formula I as defined in claim 1 with acids, acid halides, acid anhydrides, lactones, aldehydes, ketones, isocyanates, sulfonic acid chlorides, alkyl halides, alkyl sulphonates, epoxides, acrylates, methacrylates, amines, alcohols and thioalcohols.